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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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08/589,280 01/22/96 HSIEN

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11M1/0604

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POUGHKEEPSIE NY 12603

EXAMINER

MCPHERSON, J

ART UNIT

PAPER NUMBER

1113

DATE MAILED:

06/04/97

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 3/28/96

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-22 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1, 5-10 and 14-22 is/are rejected.

☒ Claim(s) 2-4 and 11-13 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of Reference Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

-- SEE OFFICE ACTION ON THE FOLLOWING PAGES --

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DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification does not provide antecedent basis for many of the claimed embodiments, as specifically described below.

The specification does not provide antecedent basis for embodiments wherein the spacers include a *third* or a *forth* layer of positive photoresist. Note that the specification provides antecedent basis for a spacer having one (page 8, lines 19-21), two (page 9, lines 11-16), more than two (page 9, lines 17-19), six or more (page 9, lines 17-20), or “many” (page 5, lines 9-11) layers of photoresist. It is the position of the Examiner that if Applicant intends to claim embodiments wherein a third and a fourth photoresist layer are specifically present (see claims 3-4, 12-13 and 16), then the specification should specifically teach these embodiments.

The specification does not provide antecedent basis for opaques pads of chromium, molybdenum, or aluminum having a *thickness of between 500 and 1500 Angstroms* (see claims 5-7 and 18-20). On page 8, lines 4-6 of the specification it is disclosed that opaque spacers formed from chromium, molybdenum, or aluminum have a thickness between about 1000 and 2000 Angstroms.

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The specification does not provide antecedent basis for opaque pads formed from black photosensitive material, or its thickness (see claims 8 and 21). The materials taught in the specification as useful in forming the opaque pads are chromium, molybdenum, and aluminum (see above).

The specification does not provide antecedent basis for the thickness of any individual photoresist layer (see claims 10-13 and 17). Furthermore, note that the thickness of each layer of positive photoresist as set forth in claim 17 is the same as the thickness taught for the entire spacer, which comprises the opaque pad and *all* the photoresist layers (page 9, lines 14-16).

The specification does not provide antecedent basis for embodiments wherein a second or subsequent layer of positive photoresist is formed on the first surface of the first substrate after the opaque pads have been formed and *before the first layer of photoresist has been formed* (see claims 2-4). In the present specification, the first positive photoresist is formed, exposed and developed on the opaque pads, and then the second positive photoresist is formed on the substrate over the first patterned photoresist. See page 8, line 22 to page 9, line 16. It is the position of the Examiner that Applicant should use the same labels (e.g. first, second, etc.) for the same layers in both the specification and the claims, so as to avoid confusion.

Applicant should copy the subject matter of the claims into the specification, or modify the terminology and/or scope of the claims to conform with the teachings of the specification, so as to provide proper antecedent basis for the claimed invention. No new matter may be added.

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Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 10, 14-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Dijon et al (Dijon). Dijon discloses a process of making a liquid crystal screen constituting spacers located on opaque layers, and a liquid crystal screen produced by the disclosed process, wherein the process comprises depositing a positive photosensitive resin layer on a plate carrying opaque layers, irradiating the resin through the plate in such a way that the opaque layers serve as a mask, and eliminating the exposed resin (column 6, lines 34-44). Furthermore, it is disclosed that each opaque layer is advantageously made of metal, specifically chromium, having a thickness of approximately 30-200 nm (column 6, lines 23-29). Therefore, this invention is not novel.

3. Claims 1 and 14-16 rejected under 35 U.S.C. 102(b) as being anticipated by either one of JP 5-307181 (JP '181) or JP 61-173223 (JP '223). Each of JP '181 and JP '223 disclose a process of making a liquid crystal device provided with a spacer, and a liquid crystal device produced by the disclosed process, wherein the process comprises forming a positive photoresist layer over a substrate provided with light shielding regions, exposing the photoresist layer through the substrate using the light shielding regions as a mask, and developing the photoresist layer. See

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the abstract and Fig. 1 of JP '181; and the abstract and Figs. 2(a)-(c) of JP '223. Therefore, this invention is not novel.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-10 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Dijon et al (Dijon), JP 5-307181 (JP '181) or JP -61173223 (JP '223). The disclosures of Dijon, JP '181 and JP '223 are discussed above in paragraphs 2-3. However, none of Dijon, JP '181, or JP '223 teach the preferred materials for the opaque pads or the layer thicknesses of the present invention. It would have been obvious to ones skilled in the requisite art to make the opaque pads from any one of chromium, molybdenum, aluminum, or black photoresist, in the process and product of any one of Dijon, JP '181, or JP '223 because it is known in the art that these materials are all functional equivalents commonly used when forming opaque regions (i.e. light shielding layers or black matrices) of liquid crystal displays. It would have been obvious to one skilled in the requisite art to arrive at the layer thicknesses of the present invention in the process and product of any one of Dijon, JP '181, or JP '223, since it has

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been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim Objections

5. Claims 2-4 and 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims because in a method of forming a spacer as set forth in claim 1, the prior art does not teach or suggest the additional steps of forming a second layer of positive resist over the first surface of the first substrate, the first surface having been provided with the exposed and developed first layer of positive photoresist on the opaque pads, exposing the second layer of positive photoresist with light illuminating the second surface of the first substrate thereby using the opaque pads as a mask, and developing the second layer of positive photoresist so that only that part of the second layer of photoresist directly over the first layer of photoresist and the opaque pads remains.

6. Any inquiry concerning this communication or an earlier communication from the Examiner should be directed to John McPherson at telephone number (703) 308-2302.

I am normally available between 8:30 AM and 6:00 PM, Monday through Thursday and on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor, Janet Baxter, may be reached at (703) 308-2303.

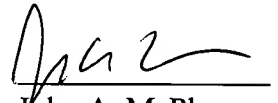
Facsimile correspondence should be directed to (703) 305-3599.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0661.



John A. McPherson
Primary Examiner
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June 2, 1997